

The Socio-Economic Impact of Migrant Remittances on Life Expectancy and Education in El Salvador

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Abstract

This article examines the correlation between migrant remittances received by communities in El Salvador and two important indicators of human development, life expectancy and school retention. Data from the 2004 national household survey (EHPM) in El Salvador was used to create regression models to determine the incremental impact of remittances on life expectancy and average education level attained across the 262 municipalities of El Salvador. The results revealed that dollar amount of remittances had a statistically significant positive relationship with life expectancy, but a similar variable, the percent of people receiving remittances, which represents penetration of migrant remittances throughout communities, had a statistically significant inverse relationship with life expectancy. Similarly the education model showed that dollar amount of remittances was correlated with better school retention, but that the percent of people receiving remittances in a given community was correlated with lower levels of school retention. This article explains these issues and examines possible explanations for these differences, including the possibility that while dollar amount of remittances may ease financial constraints and improve certain conditions for households, the psychological effects of widespread migration may have the opposite effect on households and the wider community.

Key Words:transnational migration, migrant remittances, El Salvador, education, life expectancy

1. Introduction

For many developing nations around the world, migrant remittances have come to play an increasingly significant role in the development process. Some economists estimate that nearly one tenth of the world's population are beneficiaries of the billions of dollars in migrant earnings known as remittances that are sent to nations around the globe(DeParle, 2008). Remittances are even more important during tough global economic times since they can be counter-cyclical and are not as dependent on the growth prospects of receiving countries, such as other flows like foreign investment, which have profit as the ultimate motive. The role of migration and remittances in developing nations is not uniform among migrant-sending countries, which makes it an interesting and expansive area of study. The purpose of this article is to examine the impact of migrant remittances in the country of El Salvador in Central America, where nearly one-fifth of the Gross Domestic Product is driven by these remittance earnings sent to the country by Salvadoran migrants living abroad, mainly in the United States. The study demonstrates that the dollar amount of remittances received by households and communities can have a very different relationship with human development indicators, such as average life expectancy and school retention, than the percentage of people receiving remittances in a given community, suggesting that there is no simple answer to the question of how beneficial remittances are to local populations. This article and the models have been adapted from the author's doctoral dissertation. To provide a context for this analysis, a brief background of migration and remittances in El Salvador follows.

While Mexico still remains the leader in the western hemisphere among recipients of remittances, some of the nations of Central America experience an even more dramatic impact from transnational migration, since they typically send a larger proportion of their national populations to the U.S. By some estimates, such as the Central Bank of El Salvador's figures, the small nation of El Salvador on the Pacific coast of Central America with a population just under seven million, has nearly three million citizens living outside of its borders, with the majority of these emigrants in the United States.

This figure includes second-generation Salvadorans living outside of El Salvador (Banco Central de Reserva de El Salvador (BCR) n.d.) Other more conservative estimates suggest that this number is more likely around 1.5 million (Andrade-Eekhoff, 2006), which is still a large percentage of the working age population. While it is the smallest country geographically in Central America, El Salvador has the second largest population in the region after Guatemala and the third largest economy. With 18.2 percent of its GDP in 2006 made up of migrant remittances (Ratha, 2008), this source of income has surpassed its largest export, coffee, thus making El Salvador's laborers its most vibrant export, and remittance figures equaled over six-hundred percent of foreign direct investment in 2004 (Andrade-Eekhoff, 2006).

A recent United Nations Development Program report (UNDP, 2005) is the most extensive study to date on the impact of migrant remittances in El Salvador, and it describes some of the social and economic trends that result from the cycle of migration and remittances and contains a wealth of relevant data and statistics that will be useful for further study. In an analysis of the 2005 UNDP report for Migration Information Source, Katharine Andrade-Eekhoff (2006) observed that the nation of El Salvador of the 1970's preceding the first main waves of emigration no longer exists, yet the government continues to govern the rapidly evolving society in an anachronistic manner. She also argued that one of the most pressing issues involving Salvadoran transnational migration is to work towards policy initiatives to ensure that the benefits of remittance flows help to spur community development, allowing those who do not receive remittances to reap some of the benefits as well, and spurring wider economic growth and development.

1.1. International Migration and Human Development

The field of research on migrant remittances, resulting from the flow of human capital from one nation to another in pursuit of higher wages and labor opportunities, involves much more than the physical transactions of sending money home to family members. The socio-economic impacts of migration on the migrant-sending country are very important, and they are different from the pure financial effect of remittances. As more nations are experiencing larger proportions of their populations living and working outside of the country of origin, the massive flows of people, knowledge and resources have a dramatic impact on communities and families, from changing gender roles as more women assume the leadership role in the family to broken families, brain drain of educated workers and professionals, and the more subtle emotional dependencies and loss of pride and cultural identity that may ensue. While living in El Salvador from 2000-2002 and during various visits over the next eight years, it became more apparent that many of the youth in rural El Salvador envision their only viable option for financial success and upward social mobility is to make it to the United States.

Young men, and a growing number of young women, are dropping out of school earlier and changing their aspirations, in order to save money for the very costly and treacherous journey north. There is an obvious pressure for those youngsters with the means to join their extended families in the U.S. so they can contribute more meaningfully to their family's economic well-being. The irony is that with young mothers and fathers and older brothers and sisters, who have given up the opportunity to be role-models to their siblings, the family's financial situation may improve, but the impact on the separation of spouses, siblings and parents from their family members and the dependency that evolves with the cycle of migration and remittances are more difficult to empirically measure. In addition, what most of these migration studies outside of ethnographies tend to lack, is the human element that is a vital part of the migration process for both migrants and family members. The statistical data can only capture information that is tangible and measurable, such as age, gender and education level of migrants. What it does not capture are intangible qualities that can be of utmost importance to households and communities, such as leadership ability, motivation, vision and work ethic. For example when a young man perhaps uneducated, but who is viewed as a leader in the community, such as a soccer coach and town council member, leaves the country indefinitely as a migrant, this represents a loss that cannot be quantified in an empirical manner.

According to 2010 U.N.D.P. estimates, approximately 23 percent of Salvadoran households receive remittances from relatives in the U.S., making up a substantial portion of their household income. The average amount of remittances received and the proportion of households receiving remittances vary significantly by region. These funds rarely enter the official banking system, which makes them unlikely to spur long-term development or sustainable ventures such as small business start-ups, which could have multiplier effects on the community in terms of employment and productivity.

According to World Bank data gathered from household surveys, Salvadorans spend nearly eighty-five percent of their income on short-term consumption, significantly higher than in Honduras, where it is seventy-seven percent and Guatemala at sixty-eight percent (Agunias, 2006). Another study based on household surveys found that 91% of remittance income in El Salvador in 2002 was spent on consumption, followed by 3.8% on education and 2.5% on medical uses, with savings, housing, agricultural uses, business and “other” making up the remainder (Yang, 2003). There is also evidence that money earned in the U.S. tends to drive up prices in El Salvador, which helps to counter the rise in incomes. A recent Washington Post article (Aizenman, 2006) claimed that with more dollars “chasing limited commodities” such as housing and land, prices are rising, and often those who are not receiving remittances are priced out. At the same time this rise in consumption spurred by remittances is not necessarily creating new jobs, and El Salvador continues to import both manufactured goods and unskilled or low-skilled workers from Nicaragua and Honduras to perform seasonal jobs like coffee and sugar harvesting and cow herding, which is driving down living wages.

With over ninety percent of Salvadoran migrants living in the U.S., it clearly makes the United States the main generator of remittances to El Salvador (IADB, 2007). The U.S. labor market for Salvadorans is highly differentiated by gender. Salvadoran women continue to work in traditional gendered activities, namely cleaning services and childcare, while Salvadoran men are employed in a wider variety of jobs, including construction, transportation, cooking, and gardening services. While these are low-skilled jobs, this does not mean that most Salvadoran migrants have low levels of education. A recent World Bank study found that nearly forty percent of all Salvadorans with a university degree live outside the country (Ratha, 2008).

2. Remittances, Education and Life Expectancy

There are a number of recent studies that have focused on the relationship between remittances and educational attainment and school retention, and opinions held by researchers in different fields and focused on different countries are mixed. A study on El Salvador published in the *Journal of Development Economics* (Cox Edwards and Ureta, 2003) strongly supports the hypothesis that migrant remittances have a very important positive effect on school retention, particularly in rural areas, which tend to have higher levels of poverty. Another study on Mexico by Lopez-Cordova supports the theory that increased remittances as well as a greater proportion of households receiving remittances is correlated to decreased child illiteracy and increased school attendance and retention in Mexico (as cited in Capistrano and Sta. Maria, 2006).

On the other side of the argument McKenzie and Rapoport (2006) provide empirical evidence that in rural Mexico, migration has a negative statistical effect on school attendance, but with a different impact based on age and gender. While this study cited some negative impacts of migration and remittances on schooling, the majority of studies on this topic tend to support the idea that remittance income tends to increase the household investment in education and contribute to greater school retention.

While there is a lack of research articles specifically about the effect of remittances on life expectancy, there have been studies done relating remittances to infant mortality rate in countries. One study (Lu, 2007) focusing on Indonesia found that infant mortality tends to deteriorate in communities with intense out-migration, but he also concluded that this negative impact can be mitigated by remittances. He found that over time with steady growth in remittances, the rate of infant mortality in households and communities in Indonesia is reduced. Other studies on Mexico found evidence that households with migrants in the United States have improved health compared to households without migrants. Another earlier study on Mexico (Kanaiapuni & Donato, 1999) supported Lu’s findings on infant mortality in Indonesia and found that the effects of migration on infant mortality in Mexico vary over time, since migration is a cumulative process. Another important emerging theme in the literature involves the concept of social remittances, or sharing of ideas, accepted practices and social capital to households and family members back home. Opinions and practices concerning family planning, nutrition, religion and politics are some of the few areas where individuals are likely to experience a very different perspective when moving from El Salvador to the United States.

3. Data and Methodology

The principal hypothesis this article seeks to address is whether migrant remittances have an overall positive impact on average life expectancy and school retention in communities of El Salvador.

The methodology this study utilized to determine the correlation between the amount of migrant remittances received and the dependent variables, was analysis of government survey data, using multiple regression analysis. In order to minimize the influence of other related factors on the dependent variable of each model, other relevant predictors were used as control variables in the models, in order to compare the relationship among certain variables and determine if certain variables alone or in combination have a significant correlation to the amount of migrant remittances received by individuals and households. In addition each model was run through the regression twice, the second trial using a fixed effects model with dummy variables for four of the five different regions of El Salvador, replicating the regional breakdown used in the EHPM analyses by the Salvadoran Bureau of Statistics (Dirección General de Estadística y Censos (DGEC), n.d.) and serving as a control for any variance due to departmental or regional differences not related to any of the independent variables.

The principal data set that was used for the statistical analyses is from the 2004 Encuesta de Hogares Propósitos Múltiples (EHPM) data gathered and published by El Salvador's Economic Ministry, since 1975. The data set contains a variety of statistics for all 262 municipalities in El Salvador from the 14 different departments or regions of the country. The method of data collection for the survey (EHPM) conducted by the Bureau of Statistics and Census of El Salvador was household surveys of approximately 17,000 households nationally, with representation of both urban and rural households. Tables listing the regression results for each model will be embedded in the results section.

While the data does not capture the number of transnational migrants who have left each community, both average remittance income per person and percentage of people receiving remittances can serve as related variables, and it is likely that the communities receiving larger amounts of remittance income have the larger number of transnational migrants abroad, mainly in the United States where approximately 90 percent of El Salvador's migrants are located. But as much of the research on remittance senders shows, there are many factors determining if, when and how much migrants send to their home countries, most often to immediate family members, and one of the most significant determinants in quantity of remittances is the length of time the migrant has been living in the host country. If a community in El Salvador has a high number of migrants that left before or near the start of the Civil War in the early 1980's, these migrants are probably not sending as much as more recent migrants, perhaps because over time several of their closest family members have joined them in the United States or another migrant-receiving country.

Other factors playing a role in the amount of remittances being sent by migrants to family members abroad include gender, with women tending to send back a larger proportion of their salaries than men (Sorensten, 2005), and also age. One migrant may be sending earnings back to a number of different family members in different households, which would affect the average amount sent to each person due to financial constraints. There is not necessarily a one to one ratio of migrant to remittance-receiver, and this ratio can vary widely, depending on family connections, number of other relatives that have migrated and other personal factors.

My hypotheses, which are based on theory and research findings, have not yet been fully explored in the research on El Salvador. I believe that households and communities whose income is substantially enhanced by remittances have higher living standards, better health conditions and higher levels of school attendance for children. The increase in income due to remittances may help provide families with basic necessities and subsistence, allowing more time for other types of investment, education, healthcare and preventative medicine. While this general hypothesis about increased income improving living conditions may appear to be stating the obvious, there are several mitigating circumstances, not unique to El Salvador, that may have a negative impact on these variables as a result of remittances and the phenomenon of migration, such as the breakup of families, growing inequalities between households receiving remittances and those that do not, decreased labor supply and labor force motivation, and other issues.

At the community level, I believe that overall levels of development will be higher in communities receiving remittances because there will more likely be more infrastructure present, such as telephones, financial institutions to support the remittance transactions, transport, internet access and perhaps better roads, due to more families with this type of income being able to afford cars and other status items that would be very difficult to afford at local earning levels. This might translate into better community organization and access to governmental and other funding for community development projects, healthcare and education.

4. Life Expectancy Model and Findings

Life expectancy in a given region or country is one of the elements used to calculate HDI (Human Development Index), an important worldwide metric for evaluating the standard of living in a country and also as a comparison for level of development. El Salvador is currently ranked number 90 for 2010 on the HDI index of countries behind Mexico, China, Costa Rica, and Brazil, but higher than Guatemala, Honduras and India. Life expectancies may vary across populations as a function of poverty, public health, nutrition, gender and race or ethnicity. Environmental factors, such as pollution, and life style factors such as occupation, smoking and diet all contribute to life expectancy as well.

The explanatory variables used in this model included monthly remittances per person and the percentage of people receiving remittances, while control variables included per capita income, percent urban population and literacy rate. These control variables were selected for the model since they are all likely to contribute to the life expectancy level in communities based on research in the field. It is also worth noting here that in the UNDP report, it was determined that Salvadoran migrants living in the United States have a significantly higher HDI average than Salvadorans living and working in El Salvador, many of whom are related to the migrants.

Table 1: Life Expectancy Model Results

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Average remittances per person	—	0.028** (2.52)	0.019** (2.62)	0.016* (2.086)
Percent of people receiving remittances	—	—	—	-0.016** (-2.59)
Per capita monthly income	0.009** (3.10)	0.026** (7.31)	—	0.010** (3.51)
Percent urban population	0.066** (15.17)	—	0.068** (15.81)	0.067** (15.84)
Literacy rate	0.025** (2.16)	—	0.036** (3.38)	0.009 (.743)
Adjusted R ²	.706	.385	.719	.728
F-Statistic	90.60	23.35	84.68	73.10

Notes: All models include 4 regional dummy variables with Region II (Central I) removed. T-statistic appears in parentheses.

***Significant at 5% level*

** Significant at 10% level*

The Adjusted R² value of 0.728 for the model in the right-hand column shows that the five significant independent variables of percent urban population, access to water, percent of people receiving remittances, average monthly remittances per person and monthly per capita income account for much of the variance in life expectancy. The largest contributing predictor variable of this model was found to be the percent of the population living in an urban environment, which had high t-statistics in the regression output, and was significant at the one percent level. The positive beta value shows that the larger the proportion of the population living in an urban setting or environment, the longer the average life expectancy. In the fourth variation, the resulting coefficient indicates that as the percent of the population that is urban increases by one-hundred percent, the average life expectancy in the municipality should increase by 6.7 years. There may be many reasons why this is the case, such as better access to healthcare and hospitals in urban environments, cheaper and more abundant nutritious foods, improved quality of drinking water, fewer dirt roads which create dust leading to respiratory infections, better sanitation, more employment opportunities, and a less taxing lifestyle in general.

In addition, in rural El Salvador, which may be the case in other countries as well, the voice of the rural people especially the rural poor is less likely to be heard by the government, which may lead them to be exploited in terms of allowing land contamination, water contamination or other harmful conditions to occur without taking action. Surprisingly, the variable access to water is negatively correlated to life expectancy, and it was concluded that the variable in its current form and according to its current definition, may not be so valuable since it does not include the quality of drinking water.

For example in the eastern part of El Salvador where the water table tends to be more saline due to the location in volcanic zones, the water has high mercury levels, posing a potential hazard to populations who drink this water, which can lead to kidney failure at a fairly young age. If there is no purification process, such as boiling or chlorination, access to water may not improve health, although healthy practices in the household such as boiling drinking water to eliminate bacterial contamination can help to increase the positive impact of water and enhance health and life expectancy situations in households. Also, as mentioned previously, the variable does not capture the frequency with which there is running water in the household, which is extremely sporadic in many communities of El Salvador, thus curbing the potential of this variable to improve health.

Per capita income and literacy rate are both positively correlated with higher life expectancies in most of the models. As in the education models, these two variables are statistically significant and important variables, which are associated with improved quality of life, which is why they serve as good control variables. In the third variation of this model, which did not include per capita income as an independent variable, the literacy rate was much more statistically significant with a t-statistic of 3.38. The lack of statistical significance for literacy rate in model 4 must be examined. When the model was run with all of the variables except for percent of people receiving remittances, literacy rate remained significant at the 10 percent level. However, when the model was run with percent of people receiving remittances, literacy rate was no longer significant, which may point to the theory that in communities which a larger percent of people receiving remittances, literacy is not as important a driver as it is in communities where fewer people receive remittances.

The next contributing variable of monthly remittances per person, which was found to be significant in each of the models it was factored into, also has a positive impact on life expectancy. An increase of \$100 in monthly remittances per person corresponds to an increase of 1.6 years of life expectancy, which was shown in the model. In this model's statistical output, the next most significant independent variable affecting life expectancy was per capita monthly income, which had positive coefficient values, which makes intuitive sense to conclude that as per capita income increases, life expectancy is also increased as a result and due to better living conditions, nutrition, health and other related factors. Perhaps the most surprising statistical result was the inverse relationship of percent of people receiving remittances with life expectancy, statistically significant at the 5% level. According to the resulting Beta coefficient, it can be generalized that if the percent of people receiving remittances were to double, the average life expectancy would decrease by 1.6 years.

One speculation that might help to explain this is that as more households become dependent upon remittances, tendency to consume includes eating and drinking more would probably increase. With less need to work in agriculture or other labor-intensive jobs, due to remittances, individuals over time may be likely to exercise less. As more people benefit from remittances, more families can afford to have a car, so walking might become a less common mode of transportation. The combination of increased consumption with more limited activity, both of which could be encouraged by greater penetration of remittances, may help to explain the inverse relationship between these variables. Other ideas about why this relationship exists include the cycle of migration taking its toll on family members emotionally. The stress on families broken up by migration is significant, even though the extra remittance income may help alleviate financial burdens. Many children are raised by older grandparents, while their parents work abroad, which requires extra physical output from the elderly, which could have side effects on their health and life expectancy. As migration spreads in communities, more people may be willing to take the risk to travel illegally to the United States or Canada, which can be a very stressful, dangerous journey. Within El Salvador, the average life expectancy variance by department does not seem to be correlated with the percentage of migrants in each department. If one were to conclude based on the positive beta coefficient for monthly remittances in this model, that as remittances increase life expectancy should also increase, it would indicate that the departments of El Salvador with the highest levels of migration should have the highest life expectancy.

This is however not the case, and the departments with the highest levels of migration tend to fall to the bottom of the list for life expectancy. However, a closer look at the characteristics of these departments, in terms of urban and rural percentages of the population reveals that the departments with a larger urban population tend to have a higher life expectancy while those with a larger rural population are lower on the scale. The department of San Salvador, which also is home to the country's capital of the same name is on top of the list, with an average life expectancy of 72.4 years, and the department of Morazán, which is very rural and also an area particularly hard hit by the Civil War, is at the bottom of the list with an average life expectancy of only 67.2 years, more than a five year differential. The life expectancy numbers are in line with the model's results because the variable representing the percent urban population in the municipality was found to be the most significant contributing variable, nearly five times as strong as remittances in terms of predicting life expectancy.

4.1. School Retention Model and Findings

The second statistical analysis using the Household Survey data was done to try to capture the relationship between migrant remittances and the decision to stay in school or encourage other members of the household to remain in school to higher grade levels. The dependent variable of average grade level used in this model represents the average grade level attained by individuals over age six in each municipality in El Salvador as recorded in the 2004 national census. The reason average grade level was used instead of literacy rate in this model to target the effect of remittances on education is that going to school in El Salvador, though required by law, involves more of a conscious decision on the part of the family if the family values education enough to spare their sons or daughters from helping with the workload. Research indicates that even in countries where education is legally free of charge to students, oftentimes the poorest children do not attend school, due to other roadblocks, because they could not afford the school uniforms, notebooks, pencils, transportation and lunch money. Also, since school attendance involves more of a decision-making process at the household level which may help to provide some insight into the individual family's perception of the value of education in general, it is a more relevant variable for this model.

The independent variables used in this model include average remittances per person, per capita monthly income, the percent of people receiving remittances, the percent of underweight children under five and the percent urban population. The remittance variables were incorporated in order to isolate any statistical relationship between remittances and school retention. All of the others were chosen as control variables, due to the probable impact all of these variables and what they might have on school attendance and retention. While data measuring the quality of education in different schools and different communities was not available, this would have been a very interesting independent variable in the model, since a perception on the part of a community that the educational system is not working, which may be common especially in rural areas, may negatively impact school attendance and retention.

The school retention model resulted in the high Adjusted R Square value of 0.757, which shows that the significant independent variables, which in this case were per capita income, percent urban population, percent of people receiving remittances, percent of children under five that are underweight, masculinity index and average remittances per person, together these explain about seventy-five percent of the variance in the dependent variable average grade level. The most significant independent variable in this school retention analysis was found to be per capita monthly income, which resulted in significant t-statistics at the one percent level in each of the models. Incorporating the coefficient output from the fourth variation of this model, an increase in per capita monthly income of one hundred dollars per person, would correspond to an increase in the average grade level by 1.6 levels. The relationship between average monthly remittances and per capita monthly income is important to the analysis, in that while remittance income contributes to per capita income dollars, as the literature points out, this type of income which can be classified as temporary income, can have a very different impact in terms of spending decisions as opposed to other types of permanent income such as wages. Two of the models resulted in a statistically significant coefficient for average remittances per person, with the most significant being in the third variation of this model, when per capita income is not included as a control variable. According to this model's results, an increase in average remittances per person of one-hundred dollars per month, would correspond to an increase in one grade level attained by the average person.

Table 2: Results from Average Grade Level Model—2004 data

Notes: All models include 4 regional dummy variables with Region II (Central I) removed. T-statistic appears in parentheses.

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Average remittances per person	—	0.008* (1.72)	0.010** (2.17)	0.003 (0.86)
Per capita monthly income	—	0.021** (14.10)	—	0.016** (11.55)
Percent urban population	0.029** (12.02)	—	0.028** (11.31)	0.020** (9.71)
Percent people receiving Remittances	—	-0.021** (-5.83)	—	-0.017** (-5.64)
Percent underweight children under five	-0.033** (-3.00)	—	-0.035** (-3.19)	-0.020** (-2.23)
Masculinity index	-1.977** (-2.91)	—	-1.827** (-2.90)	—
Adjusted R ²	.610	.659	.615	.757
F-Statistic	59.28	72.95	53.21	91.39

**Significant at 5% level

* Significant at 10% level

These results do not necessarily demonstrate that remittance income and per capita income have a nearly identical relationship with school retention, which the model output for the independent variable percentage of people receiving remittances brings to light. The negative coefficient values, which are significant at the five percent level for this independent variable, show an inverse relationship, indicating a negative correlation between the percent of people and households receiving remittances and school retention. Using the model in the right-hand column, the output suggests that as the percent of people in a community receiving remittances doubles or increases by 100 percent, there is a corresponding decrease of 1.7 grade levels in the average grade level attained by residents. The negative value is interesting and supports the belief that an increase in migration and remittance income in households and families may be a disincentive for young people to stay in school.

In addition, in much of rural El Salvador the quality of educational facilities, faculty and curriculum is below the national average, a further disincentive to stay in school. Upon graduating ninth grade or high school, if there are few job opportunities available for young people, it creates a further disincentive for the investment of time in education. Another reason for the negative impact that the cycle of migration and increased remittance income may have on school retention includes the situation that as parents or older siblings leave for the United States, younger siblings are left to take over household and agricultural duties, which does not allow them to continue in school to higher grade levels.

The difference in the positive and negative beta values for per capita income and percentage of people receiving remittances is also revealing because it differentiates that the increased income is not having the causal effect on the decrease in average grade level, but that there are other inherent characteristics of the cycle of remittances and migration that is having an impact. The fact that average remittances per person was not found to be significant might be explained by inferring that it is not necessarily the dollar amount of remittances that affects school attendance, but the state of being a recipient of remittances versus a non-recipient that has more of an impact. Also, as mentioned before in differentiating the two remittance-based variables, the larger the percentage of persons receiving remittances may affect a community more profoundly and be a more accurate indicator of the level of migration from a community, whereas the average remittances per person may be skewed, if a small group of families or households are the ones receiving the majority of remittance dollars.

In addition, as the level of out-migration in a community increases, it is more likely that emigrants have built solid networks in their destination country, which facilitates the movement of new migrants, who are likely to be other family members and community members. These results tend to diverge from the theories put forth by some researchers in literature on remittances, such as the study by Cox-Edwards and Ureta (2003), which found a significant positive correlation between remittance income and increased school retention. While the key independent variable, average dollar amount of remittances per person, was found to have a statistically significant positive predictive effect in two of the models, it was not statistically significant when the model controlled for per capita income and the percent urban population. The results also diverge from the results of study (Yang, 2003) on the breakdown of remittance expenditures in Salvadoran households that used household self-reports and found that only 3.8% of remittance income is reported to be spent on education.

Another related study determined this percentage to be higher based on 2004 census data, stating that 6.6 percent of remittance income in El Salvador is spent on education (Gammage, 2007). In the Yang study, the author was careful to state that this percentage is most likely understated because individuals may be miscalculating the allocation of remittance income and simply thinking of total expenditures, which would be due to human error in the survey. Yang attributed the potential positive impact of remittances on school retention to the fact that remittances allow families to make certain types of investments, such as on education, that may not have previously been possible. For example, children may be able to stay in school to higher grade levels because the extra income from remittances makes up for the income they could be earning by working. If children are not in school, a common reason is that they are needed to bring in household earnings and for this reason, they cannot afford to be in school. According to El Salvador's Ministry of Education figures published in a U.S. State Department report, more than fifteen percent of the population in El Salvador between five and seventeen years old worked, with children in rural areas being much more likely to miss school or drop out of school completely in order to work.

It would have been useful to add another independent variable that was not available to this model, which is the average distance of travel to the local school. From my experiences in El Salvador, it is clear that the more isolated a village is, that the distance and the cost of getting to school increases, which surely has a negative impact on school attendance and retention. A recent Human Rights Watch study based on a 2000-2001 World Bank survey of both formal and informal costs of education in a number of developing nations, found that cost of transportation can be a prohibitive factor in school attendance for children.

5. Conclusion

While the statistical observations in this article do not definitively identify a causal relationship between remittances and the two dependent variables of life expectancy and school retention, they provide insight for further analysis to compare the sometimes contradictory remittance variables and see if the findings hold true in other countries or over time. These issues illustrate how complex the cycle of remittances can be, which makes it a necessary area of more intensive empirical research. While this study does not come close to capturing the nuances and differences in the migration and remittance experience at the household level, it provides useful observations of trends at the community level, which can be used to work on related studies that could eventually spur changes at the policy level in El Salvador, as the remittance receiving country, and also in the United States, as the major remittance generator for Salvadorans working abroad.

These seeming contradictions provide an opportunity for government and non-governmental agencies to intervene to promote the investment of remittances into education and health, while at the same time working to improve local economies. The result of using data from only from one year for these analyses is that the findings represent only a snapshot in time, and the phenomenon of migration itself along with the constantly improving technologies for money transfers, communication and travel is constantly evolving. However, the greater the understanding is of the impacts that remittances are having, from the perspective of the individual, the family, the community and at the national level, the more quickly and efficiently policies can be put in place to increase the benefits of remittances at all levels and simultaneously promote alternative sources of income and productivity.

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